

Baton Rouge Community College

Academic Affairs Master Syllabus

Date Approved or Revised: August 1, 2008

Course Name: Organic Chemistry II

Course Number: CHEM 221

Lecture Hrs. 3

Lab Hrs. 0

Credit Hrs. 3

Course Description: Introduces organic chemical reactions and mechanisms of reactions. Designed for science majors and students in nursing, health science, and engineering.

Prerequisites: CHEM 220 and CHEM 220L

Co-requisites: CHEM 221L

Suggested Enrollment Cap: 30

Learning Outcomes: Upon completion of CHEM 221, the student will be able to achieve the following with a 70% or better success rate on homework, assignments, and exams:

- Understand the important organic chemical reactions and nomenclature of alcohols and thiols;
- Understand and explain the reactions of ethers, epoxides and sulfides;
- Identify and explain the major reactions of carbonyl compounds;
- Identify the major reactions, properties and nomenclature of carboxylic acids;
- Understand the general nucleophilic acyl substitution reactions of acid halides, acid anhydrides, esters, amides and nitriles;
- Explain the fundamental principles of carbonyl alpha substitution reactions;
- Describe the major carbonyl condensation reactions;
- Understand the nomenclature and important reactions of aliphatic amines;
- Explain the important properties and reactions of arylamines and phenols;
- Identify, draw and explain the reactions of the major carbohydrates;
- Identify, and understand the reactions and properties of lipids;
- Identify and learn the important reactions of amino acids, peptides and proteins;
- Identify and explain the important reactions and structures of nucleic acids and heterocycles.

Assessment Measures: Instructors may use a variety of assessment measures to assess student performance. But, the following assessments will be used in all sections:

- Individual instructor-designed exams will collectively assess all of the learning outcomes and will be administered during the semester as listed in the course syllabus;
- An individual instructor-designed and collaborative departmentally-designed comprehensive final exam, adhering to a department-determined content;

- Individual instructor-designed or collaborative instructor-designed assignments will be given as a portion of the total grade and will include written and oral assignments, projects, homework, and quizzes; all assignments will be graded using an instructor-designed rubric.

Information to be included on the Instructors' Course Syllabi:

- **Disability Statement:** Baton Rouge Community College seeks to meet the needs of its students in many ways. See the Office of Disability Services to receive suggestions for disability statements that should be included in each syllabus.
- **Grading:** The College grading policy should be included in the course syllabus. Any special practices should also go here. This should include the instructor's and/or the department's policy for make-up work. For example in a speech course, "Speeches not given on due date will receive no grade higher than a sixty" or "Make-up work will not be accepted after the last day of class."
- **Attendance Policy:** Include the overall attendance policy of the college. Instructors may want to add additional information in individual syllabi to meet the needs of their courses.
- **General Policies:** Instructors' policy on the use of things such as beepers and cell phones and/or hand held programmable calculators should be covered in this section.
- **Cheating and Plagiarism:** This must be included in all syllabi and should include the penalties for incidents in a given class. Students should have a clear idea of what constitutes cheating in a given course.
- **Safety Concerns:** In some programs this may be a major issue. For example, "No student will be allowed in the safety lab without safety glasses." General statements such as, "Items that may be harmful to one's self or others should not be brought to class."
- **Library/ Learning Resources:** Since the development of the total person is part of our mission, assignments in the library and/or the Learning Resources Center should be included to assist students in enhancing skills and in using resources. Students should be encouraged to use the library for reading enjoyment as part of lifelong learning.

Expanded Course Outline:

Outcome 1: Show an understanding of the important reactions and nomenclature of alcohols and thiols

Outcome 2: Understand and explain the reactions of ethers, epoxides, and sulfides

Outcome 3: Identify and explain the major reactions of carbonyl compounds

Outcome 4: Explain the important reactions and nomenclature of aldehydes and ketones

Outcome 5: Identify the major reactions, properties and nomenclature of carboxylic acids

Outcome 6: Demonstrate an understanding of the general nucleophilic acyl substitution reactions of acid halides, acid anhydrides, esters, amides, and nitriles

Outcome 7: Explain the fundamental principles of carbonyl alpha substitution reactions

Outcome 8: Describe the carbonyl condensation reactions

Outcome 9: demonstrate the nomenclature and important reactions of aliphatic amines

Outcome 10: Explain the important properties and reactions of arylamines and phenols

Outcome 11: Identify, draw, and explain the reactions of the major carbohydrates

Outcome 12: Identify and understand the reactions and properties of lipids

Outcome 13: Identify and learn the important reactions of amino acids, peptides, and proteins

Outcome 14: Identify and explain the important reactions and structures of nucleic acids and heterocycles